

ATMOSPHERIC ENVIRONMENT

Part A: General Topics

**Volume 26A
1992**

Subject Index



PERGAMON PRESS

Oxford New York Seoul Tokyo

carbonaceous material 3061
 carbonate equilibria 1651
 carbonic anhydrase 1651
 carbonyl compound 0349, 1965
 carbonyl sulphide 0145, 1383, 2031
 carboxylic acid 0541
 cascade impactor 3305
 catalyst-equipped 0741
 catalytic combustor 1177
 cations 1795
 cavities 2237
 CFC 1331, *see chlorofluorocarbon*
 CFC replacement 1331
 chamber, environmental 2365
 chamber, exposure 2785, 2885, 2963
 chamber, leaf 1165
 chambers, static and dynamic 2477
 chemical mass balance 0933, 1529, 2341, 2679, 3335
 China 2689
 China, Lanzhou 2717
 China, Shanghai 2679
 chlor-alkali complex 1253
 chlorinated solvent 1063
 chlorine 1689
 chlorofluorocarbon 1331, *see CFC*
 chlorophyll 0373
 closure model 0965
 cloud chemistry 0899, 2001, 2019, 2309
 cloud, cumulus 2309
 cloud droplet 2893
 cloud ice 2699
 cloud microphysics 1795, 2699
 cloud physics 1041, *see droplet*
 cloud, non-precipitating 1041
 cloud, orographic 2301
 cloud, stratus 1041
 cloudwater 0553, 1461, 2699
 cloudwater chemistry 1583
 cloudwater deposition 0063, 2893
 cluster analysis 2575, 2583
 coal 2193
 coal dumping 1453
 coal-fired 1589
 coastal plain 2537
 coastal site 0145
 collection efficiency 1445
 collinearity 0933, 2341
 combustion aerosol 0987
 combustion parameters 1589
 combustion source 3297
 complex terrain 0299, 2717
 complex terrain dispersion 1771
 concentration fluctuation 3127, 3145
 concentration fluctuation profile 1053
 concentration pollution 0793
 concentration-profile equation 0927
 concrete 2247
 condensation 0421, 1573
 condensation nuclei 0251
 conductance 0381
 Congo 0541
 consumer product 1063
 contaminants 2163
 continental-scale 3323
 control strategies 1427
 cooking 2125, 2193
 cookstove 2125
 cooling tower plume 2845
 corrosion 2353, 3169, 3241
 cross-wind integrated concentration 0947
 cryogenic trapping 2445
 cyclone sample 2173
 daily exposure 2125
 damage parameter 0219
 degradation 3241
 denitrification 2477
 denuder sampler 0235
 deposit data 1635
 deposition 0793, 0939, 1477, 2037, 2283, 2555, 2737, 3313, 3355, *see acid deposition, aerosol, cloudwater*
 deposition criteria 0609
 deposition, dry 0051, 0063, 0593, 0741, 0775, 0863, 1147, 1165, 1347, 1469, 1553, 1689, 2353, 2785, 2795, 2885, 2963, 3195, 3279
 deposition map, wet 1375
 deposition model 0051, 0063
 deposition uncertainties 0559
 deposition velocity 0775, 1421, 2555, 3105
 deposition, wet 0073, 0465, 0593, 1347, 2893, 3029
 desert origin 2953
 dew 1421
 dicarboxylic acid salt 2821
 diesel emission 3291
 diesel particles 3287
 differential mobility analyser 2451
 diffusion 0707
 diffusion model 0765, 0513
 diffusion model, regional 2733
 diffusion scrubber 0043
 diffusion tubes 3061
 dimethylsulphide 2381
 dimethylsulphide measurement 2661
 dispersion 0681, 0793, 1283, 1335, 1561, 2413, 2537, 3055, 3145, 3249
 dispersion-deposition model 0741
 dispersion model 1643, 3079
 dispersion model evaluation 2805
 dispersion model, mesoscale 1493
 Distributed Array of Processors (DAP) 3055
 distribution 2713
 domestic heating unit 3297
 dose 2037
 Dose Reduction Factor 3119
 downwash 1675
 drainage flow 0299
 drop size dependence 2309
 droplet 2549
 droplet evaporation 1573
 dust 1177
 dust 0667, 0871
 dust and grit 1445
 dust deposit gauge 1445
 dust emission 1453
 dust, fugitive coal 1453
 dust storm 2743
 ecosystem 0171
 ecosystem respiration 1725
 electrical energy generation 2845
 electron microprobe characterisation 1231
 elevated releases 1335
 elevational difference 0159
 emergency planning 3119
 emission control 0609
 emission reduction 0841, 3019
 emission source clusters 3219
 emission inventory 1157, 3069, 2997
 empirical orthogonal function 1701
 entraining air parcel model 2309
 entrainment 1335
 entropy 2089
 environment policy 2725
 environmental monitoring 2089, 3323
 Environmental Impact Statement 2759
 epidemiological studies 2163, 2193
 episode simulation 2523
 Eulerian grid model 0965
 Eulerian model 0513, 1427
 Eulerian Model Evaluation Field Study 1041
 Europe 1609, 3355
 EUROTAC 0171
 evaporative losses 3305
 exhaust 0987, 3287
 expired air 1519
 exposure 1519, 2001
 exposure assessment 2141
 extinction coefficient 0827
 factor analysis 0333, 1137, 1309, 1701, 1701, 2401, 3207
 fast chemical kinetic solvers 1783
 fatty acid 2821
 fatty alcohol 2821
 filter pack particle interaction 0987
 filter 3305
 finite element 3219
 flash-photolysis 2371

floor wax emissions 2365
 flow climatology 1081
 fluorene atmospheric reaction 1735
 fly-ash 2795
 fog 1421, 2063, 2509
 fog chemistry 0211, 1583
 fog forecasting method 0759
 fog water 0205, 2549, 0541
 foliar leaching 0063
 forest 0775, 1469, 1477, 2031, 2853, *see boreal forest*
 forest canopy 1361, 1469, 2893, *see canopy*
 forest decline 2001
 forest ecosystem 3195
 forest edge 1553
 forest, equatorial 0541
 forest micrometeorology 1361
 forest, pine 0863
 forest/atmosphere interaction 0171
 Forest Response Programme 0279
 forestry 1635
 formaldehyde 0819, 0899, 2923
 formic acid 0541, 1421, 3279,
 fossil fuel 1157
 France, Les Landes 0863
 free-energy relationship 1395
 Frisbee 1445
 front 0137
 Froude number 0137
 FTIR spectroscopy measurement 3099
 fungal spore 2861
 fungi 2163
 Furans 0813
 galvanized steel 2353
 gas exchange 2031
 gas exchange system 1165
 gas flux measurement 0225
 gas-liquid partitioning 2549
 gas-particle partitioning 0435, 1071, 2259, 2489
 gas scavenging 0205
 gas-to-particle conversion 2269
 gas transfer 1651
 gasoline engine 0741
 Germany, Bavaria 0001
 Germany, Frankfurt 2451
 Germany, Schachtenau 0171
 glaze-ice accretion 1029
Glycine max 0381
 Gran's titration 2389
 grass 3313
 grassland experiment 1299
 graupel 2699
 gravitation settling 2913
 Greece, Attica 0373
 Greenland 2045, 2283
 Greenland ice sheet 2627
 ground-level area source 0741
 ground-level release 0947, 1051
 halocarbon 2371, 2929
 halons 1325
 hazardous material 1573
 haze layer 2953
 health effects 2149
 heat island 1725
 heavy metals 1347, 3079, 3355
 Henry's law 0205, 2549
 Henry's law coefficient 1421
 herbage 1299
 heterogeneous chemistry 2509
 heterogeneous corrosion system 3169
 heterogeneous processes 2371
 heterogeneous reaction 0211, 1763, 3061, 3099
 heterogeneous transformation 3089
 hexachlorobenzene isomer 0031
 hexachlorocyclohexane isomer 0031
 high-elevation 2001
 high-volume sampling 0819
 hilly limestone terrain 2237
 household product 1063
 houses 2237
 human exposure 1103, 2227
 hydrocarbon 0403, 2835, 2647
 hydrocarbon, biogenic 1239
 hydrocarbon, natural 0311
 hydrocarbon, non-aromatic 2821
 hydrocarbon, non-methane 0017, 0145, 3069
 hydrochloric acid 0043, 0505, 2785
 hydrogen peroxide 1041
 hydroperoxy radical 1805
 hydrophobic compound 2549
 hydroxylalkylsulphonate 0899
 hydroxyl radical 0125, 0235, 0813, 1331, 1735, 2105, 2371,
 2835
 hydroxylated nitro-aromatic compound 2077
 hydroxymethanesulphonate 0819, 0899
 icing 1029
 impactor 3305
 incineration at sea 0793
 India 0731
 India, Garhwal Himalaya 2125
 indicating oxidant scrubber 2661
 indoor air 1519, 2149, 2163, 2185, 2193, 2211, 2219, 2247,
 2861
 indoor air model 2227
 indoor air pollution 1063, 1103, 2141, 2227
 indoor air quality 0871, 2173, 2203, 2365
 indoor concentration 2179
 indoor-outdoor comparison 0871, 2173
 indoor pollution 2923
 indoor sources 2141, 2185
 Indoor Air '90 2137
 infiltration 2251
 infrared absorption spectra 0807
 infrared spectroscopy 1239
 inhalation 2037
 inhalation exposure 2227
 instrumental neutron activation analysis 3207
 inter-tidal area 2381
 interception 3313
 inversion 0137
 ion chromatograph 0043
 ion-chromatographic technique 1493
 ionic concentration 1795, 2437
 ionic contamination 0871
 ionic ratio 0593
 ionisation potential 1395
 iron 2545, 2737
 iron(II) 0661
 iron(III) 0667
 isobutylaldehyde 0785
 isoprene 0311, 1239, 2647, 2771, 2853, 3069
 Israel 2537
 Italy, Milan 0333
 Japan 2835
 Japan, Kanto Plain 0137
 Japan, Sapporo, Sendai 2055
 K-theory diffusion model 2425
 karst 2237
 ketone 0785
 kinetic and photochemical data 1187
 kitchen 2125
 Korea 2743, 2751
 kriging 3323
 Kuwait 1583
 Lagrangian 0513
 Lagrangian model 1335, 1609, 2323, 2413, 2269
 Langevin equation 1599
 large-eddy simulation 0497, 1561, 2565, 3127, 3145
 large-scale atmospheric chemistry model 2019
 laser aerosol spectrometer 2451
 lead 3355
 leaf chamber 1165
 lidar 1253, 1675, 3249
 lifetimes, tropospheric 1331
 light-absorbing particulate matter 3161
 light scattering diameter 2451
 likelihood ratio test 0159
 limestone degradation 2785
 limestone, porous 3241
 limestone ridges 2237
 lipid 2821
 long-path FTIR spectroscopy 0225
 long-period modelling 1609
 lung cancer 2193
 maize 0381

manganese(II) 2295
 manufacturing practice 1019
 marble 0219
 marine atmosphere 1231, 1383, 1689
 marine boundary layer 0345
 Markov chains 1599
 Marshall-Palmer 2713
 Mediterranean (E) 2821
 mercury, divalent 1461
 mercury, elemental 1461
 mercury emission 1253
 mercury, oxidation 0553, 1461
 mesoscale flow model 0001
 mesoscale meteorological analysis 0137
 metal ion 0571
 metal 2283, 3169
 methane 0017, 0145, 0907
 methane, biogenic 0907
 methane oxidation 0125
 methane reduction 2665
 methanesulphonic acid 0807
 methyl iodide 2905
 methyl nitrate 3111
 methyl salicylate 0205
 Mexico, El Chichon 2947
 microclimate 1361
 micrometeorology 0225
 military action 0735
 mineral 1113
 mobility diameter 2451
 mold 2163
 monitoring network 3323, 0113, 1147, 2089
 monoterpane 2647, 3069
 monsoon 1583
 Monte Carlo process 1599
 Monte-Carlo diffusion model 2689
 mortality rate 2193
 mountain forest location 1407
 mountain slope 2001
 mountainous city 2689
 mountainous terrain 1375
 multi-dimensional integration 3323
 multi-objective optimisation 3323
 mutagenicity 3039
 mycology 2163
 National Acid Deposition Program 2089
 National Park 0345
 National Trends Network 2089
 network design 2603, 2615, 3323
 neutralization 2389
 nicotine 2211
 nighttime 0299, 2771
 nitrate 0261, 0465, 1469, 2627, 3029, 3305
 nitrate formation 1763
 nitrate ion 0593
 nitrate, organic 2771
 nitrate radical 2771
 nitrated aromatic compound 2077
 nitrated polycyclic aromatic compound 2077
 nitric acid 0235, 0505
 nitritation 2477
 nitrite 2301
 nitro-phenol 2077
 nitrofluorene 1735
 nitrogen 2323
 nitrogen budget 1005
 nitrogen compound 1689
 nitrogen dioxide (absorbing system) 1025
 nitrogen dioxide 0219, 0235, 0373, 2185, 3061
 nitrogen, organic 1005
 nitrogen oxide emission 2997
 nitrogen oxides 0017, 0211, 1157, 1259, 1735, 1763, 2301, 3099
 nitrogen oxides, organic system 0403, 0421
 nitrogen, reduced 1005
 nitrous acid 0211, 0235, 2301, 3061, 3099
 nocturnal 0299
 non-local closure model 0965
 non-passive scalars 2413
 North Sea 0051, 1231, 1689, 2381, 2499
 Norway 1309
 nuclear accident 2523, 3119
 nuclear fuel fabrication plant 3079
 nuclear power plant 2759
 nucleation 0421
 nutrient cycle 1477
 oak 0381
 occult precipitation 2893
 ocean-photochemical-climate model 2665
 oceanic source 1383
 oil, distilled 3297
 Oman 1583
 operational use 2523
 optical depth 0525
 optical mass absorption coefficient 3161
 optimal estimator 0113
 organic emission 2365
 organic peroxy radical 1805
 organochlorines 1071
 outdoor source 2179
 oxidant 1259,
 oxidant modelling 1493
 oxidant scavenger 2445
 oxidation 2309
 oxide catalyst 2795
 ozone 0125, 0279, 0373, 0625, 0643, 0653, 0725, 1259, 1271, 1461, 1609, 2001, 2203, 3265
 ozone budget 0017
 ozone control strategies 1493
 ozone depletion 1331
 ozone deposition 0775, 1165, 3105
 ozone exposure indices 0298
 ozone, hole 0731
 ozone-olefin reaction 3279
 ozone production 0311, 2647
 ozone, total 0525
 ozone, tropospheric 2665
 ozone, vertical profile 0863
 Pacific (NW) 2737
 parallel computations 2425
 parallel processing 3055
 parallelization 2425
 particle 0883, 0987, 0987, 1469, 1553, 1689, 1747, 1763, 2037, 2149, 3161, 3207, 3287, 3297, *see aerosol*
 particle capture 0793
 particle characterisation 1445
 particle composition 1701
 particle, fine 2179, 3305
 particle, mineral 1763
 particle model simulation 0707
 particle, single 0675
 particle size 2893
 particle trajectories 1561
 particulate elemental carbon 3291
 particulate, eolian 2821
 particulate matter 0435, 2679
 particulate organic carbon 0953
 passive sampler 2185, 2923
 passive sampler for ambient ozone 1407
 path-averaging 0225
 peroxy radical 1805
 peroxyacetyl nitrate 1259, 1513, 3089, 3111
 persistence 1395
 personal monitoring 2173
 personal sampling 2125
 pesticides 1071, 1635, 2259
 Philippine Republic, Manila 2673
 phosgene (COCl₂) 2975
 photo-oxidation 0373, 1239, 3039
 photochemical kinetics 1783
 photochemical modelling 1271, 1493, 2269
 photochemical oxidant model, CALGRID 1493
 photochemical oxidant 1609
 photochemical ozone episode 1271
 photochemical smog 0403, 0625, 0643, 0653, 3111
 photochemistry 0171, 0553, 1259, 2105
 photoemission 3287, 3287
 photosynthetic response 0381
 pine 0279, 0298, 0373, 3195
Pinus halepensis 0373
 plant damage 0381
 platinum emission 0741
 plume 3249

plume buoyancy 1335
 plume dispersion 1051, 3127, 3145
 plume edge detection 0793
 plume rise 0497, 1283, 1675
 plume shadowing 2845
 plume spread 0765, 1335
 plume transport 1771
 plume, turbulent reacting 2565
 plutonium 2037, 3119
 PM10 2173
 PM10 source apportionment 2341
 polar ice 2627
 pollutant deposition 0095, 1375
 pollutant emission 1413
 pollutant removal 2953
 pollutant transport 0243
 pollution climatology 2575, 2583
 pollution meteorology 0137
 polycyclic aromatic hydrocarbon 3287
 polychlorinated biphenyl (PCB) 0883, 1071, 1097, 2259
 polychlorinated dibenzodioxins 1071
 polychlorinated dibenzofurans 1071
 polycyclic aromatic hydrocarbon 0435, 1071, 1177, 1735,
 2259, 2489, 2821, 2831
 polynuclear aromatic hydrocarbon 1299
 potassium 1469
 potassium nitrate 0381
 power plant 2537
 power station 1589, 3249
 Prairie Grass data 0947
 precipitation 1461, 1529, 2641, *see rain and acid rain*
 precipitation chemistry 0159, 2869, 1137, 1147
 precipitation collector 0541, 1097, 2437
 precipitation sample 1005
 precipitation scavenging 0883
 precursor emission 1271
 pressure anomaly 0261
 pressure difference 2247
 pressure-driven flow 2247
 propionaldehyde 0785
 puff dispersion model, operational 3179
 puff model 0299, 0681
 quality assurance (computer) model 1019
 quality assurance 0191
 quality criteria 1019
 radioactive emission 3079
 radioactivity 3313
 radiochemical OH measurement 2105
 radioisotope 2523
 radionuclide 3313
 radon 0251, 2237, 2251
 radon entry 2247
 radon flux 0145
 rain 0883, *see precipitation*
 rain event 2437
 rain, freezing 1029
 rain gauge 0357
 rain, simulated 3313
 rain water 0553, 1375, 1461, 2641, 2699, 3029
 raindrop 1795
 raindrop size 2713
 rainfall 2751
 rainfall cleaning 3291
 rainfall enhancement 0357
 rainfall, orographic 0357, 1375
 rainout 2019
 rainwater quality 2401
 random-walk model 0707, 1283, 2413, 3055
 receptor 1477
 receptor model 0725, 0933, 1529, 1701, 2341, 3335
 receptor-site 0333
 red spruce decline 1361
 redox reaction 2545
 regional air quality modelling 3219
 regional analysis 2001
 regional apportionment 1529
 regional modelling 1427
 regional pollution 3355
 regional-scale mixing 0095
 remote site 0191
 residences, damp 2861
 residential exposure 2185
 residential indoor aerosol 2179
 respiratory infection 2185
 retention 3313
 rice 1651
 rime 1029, *see acid rime*
 RO2 1805
 rock-forming metal 2283
 rural air 2301
 rural area 0311
 rural continental precipitation 1005
 rural site 0349
 S(IV) oxidation 0571, 2063
 saline solution 3105
 salt marsh 2381
 sampling artifact 2259
 Scandinavia 0261
 SCAQS 0579, 2269
 scavenging 0883, 1041, 1795
 scavenging model 0559
 scavenging process 2437
 sea-breeze circulation 0051
 sea passage 0793
 sea-salt particle 1763
 sea surface 3105
 sea water 2905, 3105
 second-order closure model 2425
 secondary organic aerosol 2269
 sediment-air exchange 2381
 seeder-feeder effect 0357, 1375
 semivolatile organic compound 2831
 sensitivity analysis 1643
 sequential collector 2437
 shared-memory machine 2425
 shelter 2037, 3119
 shipboard sampling 2737, 3207
 shower 1103, 2227
 silicon 2737
 similarity theory 1335
 skewness 0681
 skewness, kurtosis 2713
 Slinn model 2893
 Slovenia, Ljubljana 0735
 smog chamber 0403, 0421, 0625, 0643, 0653, 1239
 smoke emission 2193
 smoke particle 1177
 snow chemistry 2045, 2283, *see black snow*
 snow cover 1545, 2893
 snowdrifting 0927
 snowfall 0095, 2893
 snowflakes 2699
 snowpack 2283
 soil 2251, 2477
 soil erosion 0927
 soiling 3291
 solar radiation 1545
 soot 0987, 3161, 3287
 sorption 0435, 1071, 2489
 source apportionment 1701, 2179, 3335
 source attribution 1427
 source profile 0333
 source-receptor 0609, 1427
 source-receptor linearity 2111
 source-receptor matrices 2323
 source-receptor relationship 1271, 1413
 South Polar Sea 2905
 South Pole 2045
 soybean 0381
 space heating 2125
 Spain, Vitoria 2437
 spark-ignition engine 0987
 speciation 1995
 spore 1113
 spray 1635
 spruce forest 2555
 stable condition 0707
 stacks, tall 2537
 statistical methodology 0159
 steel 2353
 stemflow measurement 0063
 stiff ordinary differential equations 1783
 stone degradation 2785, 2795, 2885, 2963, *see building*
 stone weathering 3241

stratiform precipitation 0541
 stratosphere 2947
 stratospheric aerosol 2947
 streaker sample 0333
 structure-reactivity 1395
 sub-grid representation 3219
 subterranean transport 2237
 sulphate 0063, 0073, 0159, 0261, 0465, 0675, 1041, 1427,
 1469, 2509, 2627, 3029
 sulphate formation 2309
 sulphate ion 0593
 sulphate, non-marine 0261
 sulphate, non-seasalt 2737
 sulphate, wet 1407
 sulphate wet deposition 1529
 sulphite 0667
 sulphite-induced autoxidation 2295
 sulphite-induced oxidation 0661
 sulphonic acid 0907
 sulphur 1427, 1477, 1689, 2031, 2445
 sulphur compounds, air-borne 1477
 sulphur compounds, reduced 2445
 sulphur deposition 0063
 sulphur dioxide 0001, 0017, 0051, 0073, 0219, 0345, 0373,
 0609, 0667, 0907, 1461, 1713, 2019, 2063, 2689, 2785,
 3061, 3241
 sulphur dioxide monitor 0191
 sulphur dioxide source emissions 1407, 1427, 2997
 sulphur enrichment 1113
 sulphur mass 0675
 sulphur oxides 1157
 sulphur, reduced 2381
 sulphuric acid 0987
 sun photometer 0525
 surface bond product 3099
 surface circulation pattern 0261
 surface wetness 1165
 surfactant 3105
 sustainable development 2725
 Switzerland 2219
 synergistic effect of Mn(II) 2295
 synoptic classification 2537
 tagged species engineering model (TSEM) 1427
 terpenes 2853
 terrigenous aerosol 1175
 thermal decomposition pathway 3111
 thermal desorption 0987
 thermal dissociation 1995
 thermodynamic equilibrium 0505, 0579
 thermodynamics 2953
 thin water films 1713
 three-mode matrix 1701
 throughfall 0063, 1553
 throughfall, net 0063
 time-splitting finite element 2425
 tobacco 0373
 tobacco smoke 2203, 2211
 Total Exposure Assessment Methodology (TEAM) 1519
 Total Suspended Particulates 2125
 toxic material 3119
 trace compound 0145
 trace element 1309, 3207
 trace metal 2499
 trace metal ion 0667
 tracer 0251, 0299
 tracer dispersion experiment 3203
 tracer, elemental 1529
 trace of opportunity 0243
 tracer, regional 0725
 trajectory 0073
 trajectory, back 0261, 1081, 1271
 trajectory, isobaric 2575, 2583
 trajectory model 1271
 trajectory, stochastic 1599
 transboundary flux 0001
 transport 0001, 0095, 2269
 transport, long-range 0073, 0095, 0243, 0251, 1309, 2835,
 3355
 transport model, long-term air pollution 1347
 transport model 0445, 1609, 2523
 tree 2031
 tree damage 0373
 trend detection 2603, 2615
 trend 1137
 trend analysis 1121
 tritium concentration 2751
 tropical cloud forest site 1421
 turbidity 0525
 turbulence characteristic 2717
 turbulence closure model 1771
 turbulence energy 1561
 turbulent diffusion 2425
 turbulent dispersion 1599
 turbulent exchange 0225
 turbulent field 2413
 two-dimensional zonal model 0017
 UK 1375, 3069, 3079
 UK, England 0235, 2389
 UK, England, Great Dun Fell 2301
 UK, Lake District 0357
 UK, Manchester 2869
 UK, Rothamsted Experimental Station 1299
 UK, Scotland 0095
 UK, Scotland, Eskdalemuir 2575, 2583
 UK, Snowdonia 0357
 Ukraine, Chernobyl 2523, 2805, 3179
 ultraviolet B 0731
 ultraviolet radiation 0731
 ultraviolet spectrum 0785
 ultraviolet absorption spectra 0785
 unique ratios (SPUR) analysis 0333
 uranium 3079
 urban aerosol 2055
 urban air 2077
 urban air pollution 1725, 2929
 urban area 2717
 urban fog 2509
 urban particulate material 1071
 urban plume 3265
 urban pollution 2689
 urban-rural comparison 2869
 USA 1413, 2001
 USA, Alaska 0345
 USA, California 0827, 1407, 2647, 2929, 3279, 3335
 USA, California, Sierra Nevada 3195
 USA, Great Lakes region 0883
 USA, Hawaii 0251, 0345
 USA, Lake Michigan 3265
 USA, Los Angeles 0243, 2269
 USA, Lower Ohio River Valley 0841, 1147
 USA, New England 2063
 USA, New Hampshire 1361
 USA, Rhode Island 0725, 1519
 USA, Texas 1137
 user-friendliness 1019
 valley 0299, 0759
 vapour pressure 1071
 variance technique 0225
 variogram 3323
 vegetation 2647, 3313
 vegetation exposure indices 1121
 vehicle emission 2341
 ventilation 2247, 2251
 vertical dispersion 0947
 vertical mixing 0965
 vertical profile 1469
 visibility 0827
 volatile hydrocarbon, anthropogenic 2983
 volatile organic chemical 2929
 volatile organic compound 1063, 1519, 1103, 1589, 2179,
 2219, 2227, 2365
 volatile pollutant 1063
 volatilisation 1071, 2489
 volcano 0345, 2947
 water absorption 3241
 water activities 1661
 water drop evaporation 0205
 water use 2227
 weather classification 0827
 weather type 2575, 2583
 weathering experiment 3241
 wetland 0907
 wind direction persistence 0983

wind shear 1561
wind speed 1675
wind speed, low 0707, 0765
wind-tunnel study 1453
windshear 0681
winter injury 1361

wood 2193
wood and duff burning 1177
wood-finishing product 2365
yaw pitch 2913
yellow sand 2743
zinc 3355

Now Available in **Flexicover**

Atmospheric Transmission, Emission, and Scattering

Thomas G. Kyle,

Los Alamos National Laboratory, Los Alamos, NM 87545, USA

"...well organised and is written in a lucid manner. Good illustrative examples and diagrams are given."

Journal of Atmospheric and Terrestrial Physics, 1992

Introduces the physical processes and meteorology required to understand the behaviour of light and radiation in the atmosphere. Integrating the treatment of atmospheric optics from the ultraviolet to the microwave, the book presents a detailed overview, together with discussions, on the associated meteorology and atmospheric composition, which gives the meteorological background necessary to deal with the varying conditions found in the real atmosphere. Mathematical details provide a concise description of results thus allowing readers with a knowledge of meteorology or a single wavelength region to comprehend the transmission, emission and scattering in all wavelength regions. Rayleigh and Mie scattering are covered as well as the aerosol and raindrop distributions found in the atmosphere. Detailed models of the atmosphere and the distribution of trace gases are supplied, and finally a chapter is devoted to standardised software and available data bases.

For meteorologists, atmospheric scientists and physicists.

Contents:

Preface.
Acknowledgement.
The thermodynamics of the atmosphere.
Models of the atmosphere.
Aerosols and clouds.
Refraction, polarization, and aerosols.
Rainbows, halos, and such.
Scattering.
Turbulence and optics.
Spectra of diatomic molecules.
Symmetric and asymmetric top spectra.
Line shape functions.
Absorption and emission.
Molecular absorption by species.
Computational tools.
References.
Subject index.

229 x 152 mm 288pp 42 lit refs 99 illus Due Feb 1993
0 08 040288 7 (F) *£23.00/US\$41.00
229 x 152 mm 288pp 42 lit refs 99 illus 1991
0 08 040287 9 (H) *£44.00/US\$79.00



PERGAMON PRESS

North America: Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA
UK & all other countries: Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK

A member of the Elsevier Science Publishing Group

EA2A16 .11/92 *Sterling prices quoted are definitive and apply worldwide, except in the Americas. US dollar prices quoted apply in the Americas only.

NEW NEW NEW NEW NEW NEW NEW NEW NEW

Save £40.00/US\$60.00 by ordering before 30 September 1993

Concise Encyclopedia of Environmental Systems

Edited by **P. C. Young**,

Professor of Environmental Systems and Director, Centre for Research on Environmental Systems and Statistics, Institute of Environmental & Biological Sciences, Lancaster University, Lancaster, UK

The *Concise Encyclopedia of Environmental Systems* provides a concise overview of the current state of the art in the study of environmental systems. The subjects covered include: agricultural systems; atmospheric processes and air quality; ecosystems; environmental chemistry; geology, soil processes and geophysics; hydrology, fluid dynamics and water quality; marine processes; meteorology; and climatology. In addition, many of the articles cover the methodological procedures used in environmental systems analysis, with contributions on automatic control and management; computers in modelling and management; environmental planning; environmental methods, including time-series analysis; mathematical modelling, including data-based, physically based and simulation modelling; remote sensing and image processing; uncertainty in environmental systems; and sensitivity analysis. The encyclopedia is extensively cross-referenced on two levels - to articles of direct relevance as well as to other articles which will provide the reader with more general background information.

For those working on environmental systems, or undergraduates and postgraduates studying environmental science (including ecology), engineering, or mathematics.

Contents include:

Abiotic control mechanisms in terrestrial and freshwater environments. Aerosol particle size. Agricultural soils: fate of toxic substances. Air conditioning control systems. Air pollutants: deposition. Air pollution: monitoring systems. Air pollution: uncertainty of model predictions. Algal growth modelling. Bilinear equations in ecology. Bond graphs. Catastrophe theory. Chaos theory. Chemical oxygen demand. Climatic data. Component (structural) models of time series. Computer technology in the water industry. Data analysis: an overview. Data-based mechanistic models. Data compression. Dispersion in the environment. Dissolved oxygen. Ecological disturbance theory. Ecological modelling: aggregation errors. Ecological modelling: new perspectives. Ecosystem compartmental modelling. Energy resources, renewable. Environmental modelling and the scientific method. Environmental modelling with advanced computers. Extrapolation, interpolation and smoothing of nonstationary time series. Finite-element method. Flood warning, adaptive. Fractals. Gas chromatography. Geographical information systems. Glasshouse systems: automatic control. Hydrochemical models of acidification in catchments. Hydrological forecasting, real-time. Infrared spectrometry. Ion-selective electrodes. Lake ecosystem modelling: uncertainty. Lakes: measurements of chemical processes. Land surface processes in climate models. Laser spectroscopy in atmospheric analysis. Linear and nonlinear systems. Logistic delay population model. Mass spectrometry. Michaelis-Menten models. Model order estimation. Multiobjective optimization: Pareto optimality. Neural networks. Nitrogen cycle modelling: nominal and perturbed dynamics in watersheds. Odorous compounds in air. Organic chemicals in soil systems: behavior. Photochemical smog formation. Plume rise and dispersion. Population modelling. Radioecological modelling. Rainfall flow processes: systems models. Recursive estimation. Regional sensitivity analysis in environmental systems. Remote sensing: an overview. Remote sensing: classification of multispectral images. Risk analysis. River basins: management of water quality. Rivers and estuaries: finite-difference modelling. Seasonal adjustment. Sensitivity analysis in ecological system models. Simulation modelling: partial differential equations. Soils: solute transport. Stability of complex ecosystems. Systems analysis for policy making: a support system. Systems estimation in plant physiology. Thermal environment. Tides: mechanistic modelling. Time-series analysis in the frequency domain. Top-down modelling in ecology. Total oxygen demand. Toxic substances: ecological effects. Trace gases and future climate. Transport processes in heterogeneous materials. Tropic structures modelling. Uncertainty, identifiability and predictability in environmental models. Validation of phytoplankton models. Validation of simulation models: philosophy and statistical methods of confirmation. Volterra population equations. Water bodies time scale estimation: mass concepts. Water pollution: inorganic nitrogen compounds. Water pollution: phosphorous. Water quality modelling in lakes and reservoirs. Water quality: remote sensing. Weather radar calibration: systems approach. Wind velocity determination using optical lasers.

Series: ASCI Advances in Systems Control and Information Engineering

248 x 184 mm 750pp

400 illus approx 2000 lit refs approx

Due July 1993

ISBN 0 08 036198 6 (Hardcover)

Pre-publication price £155.00/US\$250.00

Post-publication price £195.00/US\$310.00

(Pre-publication offer applies to orders received before 30 September 1993)

Sterling prices quoted are definitive and apply worldwide except in the Americas. US dollar prices quoted apply in the Americas only.

Prices and proposed publication dates are subject to change without prior notice.



PERGAMON PRESS

USA, Central & South America: Pergamon Press, Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

UK & all other countries: Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK

A member of the Elsevier Science Publishing Group

EV 205/93

SEND FOR A FREE SAMPLE COPY OF...

CHAOS, SOLITONS AND FRACTALS

APPLICATIONS IN SCIENCE AND ENGINEERING

Executive Editor: M. EL NASCHIE, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, Silver Street, Cambridge CB3 9EW, UK

Chaos, Solitons and Fractals provides a medium for the rapid publication of full length original papers, short communications, reviews and tutorial articles in the following subjects:

-bifurcation and singularity theory, deterministic chaos and fractals

-stability theory, soliton and coherent phenomena

-formation of pattern, evolution, complexity theory and neural networks

Contributions on both fundamental and applied studies are welcome, but the emphasis of the journal will be on applications in the following fields:

Physical Sciences

classical mechanics, including fluid mechanics; quantum and statistical mechanics; lasers, optics and acoustics; plasma physics and fusion; solid-state and condensed matter physics; chemistry and chemical physics; astronomy and astrophysics; materials science; geophysics; meteorology.

Engineering

marine engineering; mechanical, aeronautical and astronautical engineering; electrical engineering; chemical engineering; structural and civil engineering.

Biomedical and Life Sciences

biology; molecular biology; population dynamics; zoology; theoretical ecology.

Social Sciences

economics; sociology; political science; philosophy and epistemology.

All essential colour illustrations and photographs will be reproduced in colour at no charge to the author.

A Selection of Papers

L. PRIGOGINE (Belgium), T. Y. PETROSKY, H. H. HASEGAWA &

S. TASAKI (USA), Integrability and chaos in classical and quantum dynamics.

K. KONNO, M. MITUHASHI & Y. H. ICHIKAWA (Japan), Soliton on a thin vortex filament.

T. KAPITANIAK (Poland), On strange nonchaotic attractors and their dimensions.

B. V. CHIRIKOV (USSR), Patterns in chaos.

M. KLEIN, G. BAIER & O. E. RÖSSLER (Germany), From N-Tori to hyperchaos.

A. JEFFREY & M. N. B. MOHAMAD (UK), Travelling wave solutions to a higher order KdV equation.

G. CASATI, I. GUARNERI & D. L. SHEPELYANSKY (Italy), Two-frequency excitation of the hydrogen atom.

Y. UEDA (Japan), Survey of regular and chaotic phenomena in the forced duffing oscillator.

WEI-MOU ZHENG (PRC), Symbolic dynamics for the Lozi map.

(00967)

Subscription Information

1993: Volume 3 (6 issues)

Annual subscription (1993)

£320.00

US\$512.00*

ISSN: 0960-0779



PERGAMON PRESS

Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK

Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

A member of the Elsevier Science Publishing Group

First price quoted is definitive. * Asterisked price is quoted for convenience only and is subject to exchange rate fluctuation.

Prices include postage and insurance. Customers resident in the EC will be charged VAT (or the equivalent) at their own country's rate, unless a VAT (or equivalent) registration number is supplied. For more details please contact your agent or Pergamon Press. Pergamon's VAT registration number in the UK is: GB 490 6364 25 000.

SEND FOR A FREE SAMPLE COPY OF...

ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY

The Official Journal of the Society of Environmental Toxicology and Chemistry (SETAC)

Editor-in-Chief: C. H. WARD, *Department of Environmental Science and Engineering, Rice University, Houston, TX 77251, USA*

Environmental Toxicology and Chemistry, the official journal of the Society of Environmental Toxicology and Chemistry, is dedicated to furthering scientific knowledge and disseminating information on environmental toxicology and chemistry, including the application of these sciences to hazard assessment. The journal provides a forum for professionals in education, industry, government and other segments of society involved in the use, protection and management of the environment and the welfare of the general public. *Environmental Toxicology and Chemistry* is divided into three sections, each with its own editor: environmental chemistry, environmental toxicology and hazard assessment. Interdisciplinary in scope, the journal includes integrative studies involving components of classical toxicology, physiology, biology, microbiology, organic, environmental and analytical chemistry, anatomy, genetics, ecology, soil, water, atmospheric sciences and economics.

A Selection of Papers

M. S. MAJEWSKI, M. M. McCHESNEY & J. N. SEIBER (USA), A field comparison of two methods for measuring DCPA soil evaporation rates.

G. SASSON-BRICKSON & G. ALLEN BURTON, Jr. (USA), *In situ* and laboratory sediment toxicity testing with *Ceriodaphnia dubia*.

J. W. SPROULE, W. Y. SHIU, D. MACKAY, W. H. SCHROEDER, R. W. RUSSELL & F. A. P. C. GOBAS (Canada), Direct *in situ* sensing of the fugacity of hydrophobic chemicals in natural waters.

P. VAN BEELEN, A. K. FLEUREN-KEMILIA, M. P. A. HUYS, A. C. P. VAN MONTFORT & P. L. A. VAN VLAARDINGEN (The Netherlands), Uptake and elimination kinetics of organophosphorous pesticides in the guppy (*Poecilia reticulata*): Correlations with the octanol/water partition coefficient.

J. W. OWENS (USA), The hazard assessment of pulp and paper effluents in the aquatic environment: a review. N. NYHOLM (Denmark), The European system of standardized legal tests for assessing the biodegradability of chemicals.

F. HEIMBACH, W. PFLUEGER & H.-T. RATTE (Germany), Use of small artificial ponds for assessment of hazards to aquatic ecosystems.

Indexed/Abstracted in: *Curr Cont ASCA, Biosis Data, CAB Inter, Cam Sci Abstr, Chemical Abstracts Service, CABS, Curr Cont/Agri Bio Env Sci, Environ Per Biblio, ISI/Geosci Tech, Sci Cit Ind, SCISEARCH Data*

(00686)

Subscription Information

1993: Volume 12 (12 issues)

Annual subscription (1993)

US\$495.00

£309.00*

ISSN: 0730-7268



PERGAMON PRESS

Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK

Pergamon Press Inc, 660 White Plains Road, Tarrytown, NY 10591-5153, USA

A member of the Elsevier Science Publishing Group

First price quoted is definitive. * Asterisked price is quoted for convenience only and is subject to exchange rate fluctuation. Prices include postage and insurance. Customers resident in the EC will be charged VAT (or the equivalent) at their own country's rate, unless a VAT (or equivalent) registration number is supplied. For more details please contact your agent or Pergamon Press. Pergamon's VAT registration number in the UK is: GB 490 6384 25 000.

SEND FOR A FREE SAMPLE COPY OF...

CHEMOSPHERE

CHEMISTRY, BIOLOGY AND TOXICOLOGY AS RELATED TO ENVIRONMENTAL PROBLEMS

Editor-in-Chief: **O. HUTZINGER**, University of Bayreuth, Chair of Ecological Chemistry and

Geochemistry, Postfach 10 12 51, D-8580 Bayreuth, Germany

Executive Editor: **T. STEPHEN**, 8 Lewis Close, Risinghurst, Headington, Oxford OX3 8JD, UK

Chemosphere is an international journal designed for the rapid publication of original and important communications as well as review articles. *Chemosphere*, as a multi-disciplinary journal, offers maximum dissemination of investigations related to the health and safety of every aspect of life. Environmental protection encompasses a very wide field and relies on scientific research in chemistry, biology, physics, toxicology and inter-related disciplines.

Three types of communication will be published.

- * Original communications describing important new discoveries or further developments in important fields of investigation related to the environment and human health.
- * Invited reviews, critical but non-polemical, mainly of new rapidly developing areas of environmental protection.
- * A special information and news section will provide current information on books, meetings, industrial practices and government decisions.

Scientific investigations in any of the following main topics will be considered for publication:

The Natural Environment; Meteorology and Climate; Environmental Chemicals and Analysis; Air and Water Pollution, Waste Treatment; Environmental Fate of Chemicals; Pharmacodynamics - Bioaccumulation - Metabolism; Effects on Man; Occupational Hazards and Exposure; Ecotoxicology; Atmospheric Chemistry and Global Change.

Chemosphere publishes the annual Dioxin conferences.

A Selection of Papers

E. P. GALLAGHER, R. C. CATTLEY & R. T. DI GIULIO (USA), The acute toxicity and sublethal effects of chlorothalonil in channel catfish (*Ictalurus punctatus*).

G. MERLIN, H. THIEBAUD, G. BLAKE, S. SEMBIRING & J. ALARY (France), Mesocosms' and microcosms' utilization for ecotoxicity evaluation of dichloromethane, a chlorinated solvent.

T. KATAMI, H. NISIKAWA & A. YASUHARA (Japan), Emission of chlorinated compounds by combustion of waste dry-cleaning materials.

J. H. VAN WIJNEN, A. K. D. LIEM, K. OLIE & J. A. VAN ZORGE (The Netherlands), Soil contamination with PCDDs and PCDFs of small (illegal) scrap wire and scrap car incineration sites.

Indexed/Abstracted in: *Anal Abstr*, *ASCA*, *Aqua Abstr*, *Biosis Data*, *CAB Inter*, *Cam Sci Abstr*, *Curr Cont*, *Chemical Abstracts Service*, *CABS*, *Environ Per Bibl*, *Excerpt Med*, *PASCAL-CNRS Data*, *Sci Cit Ind*, *SCISEARCH Data*

(00362)

Subscription Information

1993: Volumes 26 & 27 (24 issues)

Annual subscription (1993)

£790.00

US\$1264.00*

ISSN: 0045-6535

PERGAMON PRESS



Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK
Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

A member of the Elsevier Science Publishing Group

First price quoted is definitive. * Asterisked price is quoted for convenience only and is subject to exchange rate fluctuation.

Prices include postage and insurance. Customers resident in the EC will be charged VAT (or the equivalent) at their own country's rate, unless a VAT (or equivalent) registration number is supplied. For more details please contact your agent or Pergamon Press. Pergamon's VAT registration number in the UK is: GB 490 6384 25 000.

SEND FOR A FREE SAMPLE COPY OF...

ENVIRONMENT INTERNATIONAL

A JOURNAL OF SCIENCE, TECHNOLOGY, HEALTH, MONITORING AND POLICY

Editor-in-Chief: **ALAN MOGHISSI**, PO Box 7166, Alexandria, VA 22307, USA

Managing Editor: **BARBARA MOGHISSI**, PO Box 7166, Alexandria, VA 22307, USA

Environment International, published bimonthly, is a multi-disciplinary forum for the publication of original environmental literature. Vital data, causes of pollution, and methods for protection are all featured, covering the entire field of environmental protection.

Environment International includes contributions from the following areas: concentration of elements and compounds, notably pollutants; release rates of pollutants from various sources; transport of pollutants in the environmental media; health and ecological effects of pollutants; control technologies; description and interpretation of laws, regulations and standards; information which will contribute to the understanding of environmental behaviour of pollutants or will promote environmental protection; public policy alternatives including legislation; national and international recommendations and practices to help bring about a lasting improvement in environmental protection.

A Selection of Papers

M. K. SPARROW (USA), From data warehouse to information craft shop: the changing shape of information support for environmental protection.

L. GUNNARSEN & P. O. FANGER (Denmark), Adaption to indoor air pollution.

C. A. S. HALL (USA), An idiosyncratic assessment of the role of mathematical models in environmental sciences.

G. H. MILES, A. J. JAKEMAN & J. BAI (Australia), A method for predicting the frequency distribution of air pollution from vehicle traffic, basic meteorology, and historical concentrations to assist urban planning.

B. BERGLUND, L. GUSTAFSSON & T. LINDVALL (Sweden), Thermal climate.

R. A. SEDJO (USA), Climate, forests, and fire: a North American perspective.

New Patents and Software Survey sections are included in this journal.

Indexed/Abstracted in: *Curr Cont ASCA, Aqua Abstr, BIOSIS Data, Cab Inter, CABS, Cam Sci Abstr, Chemical Abstracts Service, Eng Ind, Energy Database, Environ Per Bibl, Energy Res Abstr, Excerpt Med, Geo Abstr*

(00326)

Subscription Information

1993: Volume 19 (6 issues)

Annual subscription (1993)

£270.00

US\$432.00*

ISSN: 0160-4120



PERGAMON PRESS

Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, UK

Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

A member of the Elsevier Science Publishing Group

First price quoted is definitive. * Asterisked price is quoted for convenience only and is subject to exchange rate fluctuation.

Prices include postage and insurance. Customers resident in the EC will be charged VAT (or the equivalent) at their own country's rate, unless a VAT (or equivalent) registration number is supplied. For more details please contact your agent or Pergamon Press. Pergamon's VAT registration number in the UK is: GB 490 6384 25 000.

ATMOSPHERIC ENVIRONMENT

AN INTERNATIONAL JOURNAL

SCOPE

The subject matter of papers published in *Atmospheric Environment* covers all aspects of the interaction of people and other life forms with their atmospheric environment. This includes the administrative, economic and political aspects of these interactions. Air pollution research and its applications are covered, taking into account changes in the atmospheric flow patterns, temperature distributions and chemical constitution caused by natural and artificial variations in the Earth's surface.

Papers dealing with the urban environment will be collected in separate issues of the Journal called *Atmospheric Environment, Part B: Urban Atmosphere*.

Authors are referred to the Preparation of Papers guidelines, printed in the first issue of each volume, for advice concerning the preparation of their manuscript.

Contributions should be submitted to one of the Executive Editors (addresses given below).

DR P. BRIMBLECOMBE *School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, U.K.*

DR M. BENARIE *20 Boulevard Jean Pain, 38000 Grenoble, France.*

PROF. R. D. BORNSTEIN *Department of Meteorology, San Jose State University, San Jose, CA 95192-0104, U.S.A.* (For urban related papers—authors wishing to submit articles to *Urban Atmosphere* should provide four copies of manuscripts.)

Contributions from North America on the following subjects should be submitted to the appropriate Editor (addresses given below).

DR P. J. LIOY *Exposure Measurement and Assessment Division, EOHSI, 681 Frelinghysen Road, P.O. Box 1179, Piscataway, NJ 08855-1179, U.S.A.* (For local atmospheric chemistry papers.)

DR H. B. SINGH *Earth System Science Division, MS 245-5, NASA Ames Research Center, Moffett Field, CA 94035, U.S.A.* (For modelling and global chemistry papers.)

DR A. S. LEFOHN *A.S.L. & Associates, 111 North Last Chance Gulch, Helena, MT 59601, U.S.A.* (For air pollution effects and regional air quality characterization papers.)

